ANNEXURE - XVII

SPECIFICATION FOR G.I. WIRES.

1.0 FOREWORD

G.I. Wires of different sizes are used in distribution system for various applications such as earthing of metallic fittings, bearer wire for service cables, guarding of power lines etc.,

2.0 SCOPE

This specification covers details of solid G.I. Wires for use in distribution system.

3.0 APPLICABLE STANDARDS

Except when they conflict with the specific requirements of this specification, the G.I. Wires shall comply with the provisions of IS:280-1978 and IS:7887-1992 or the latest version thereof.

4.0 APPLICATION & SIZES

G.I. Wires covered in this specification are intended for the following applications.

Applications		**Size (nominal dia)**
i) Bearer wire for service cables	-	3.15mm (for single phase services)
ii) Earthing of transformers, poles	-	4mm (for three phase service lines)
iii) Continuous earth wire for 11KV	-	4mm.
iv) Protective guarding at the crossing of overhead power lines with roads, railway tracks and tele-communication lines.	-	3.15, 4 & 5 mm

5.0 MATERIAL

5.1 The wires shall be drawn from the wire rods conforming to IS:7887-1992 or the latest version thereof.

5.2 The requirements for chemical composition for the wires shall conform to IS:7887.

5.3 The wire shall be sound, free from split surface flaws, rough jagged and imperfect edges and other detrimental defects on the surface of the wires.

5.4 The wires shall be galvanized with Heavy Coating as per IS: 4826-1979 (275g/m²) or the latest version thereof.

6.0 GRADES

G.I. Wires shall be of Annealed Grade with Tensile Strength of 300-550 MPA.

NOTES : 1) 1 MPa = lN/mm2 = I MN/m2 = 0.1020 kgf/mm2.

2) Restricted ranges of tensile strength in case of galvanized wire may be Agreed to at the time of enquiry and order.

7.0 TOLERANCE ON DIAMETER

The tolerance on nominal diameter at any section of wire shall not exceed ±2.5%. Further, the maximum difference between the diameters at any two cross-sections of wires shall not exceed 2.5%.

8.0 TESTS

The following tests shall be carried out in accordance with IS:280 -1978 or the latest version thereof as per sampling criteria stipulated therein.

i. Dimensional check (dia)
ii. Visual inspection regarding freedom from defects
iii. Tensile test.
iv. Wrapping test (for wire diameters smaller than 5mm)
v. Bend test (for wire diameter 5mm only)
vi. Coating test
vii. Chemical composition

9.0 PACKING

9.1 The wires shall be supplied in 50-70 kg coils each having single continuous length. Each coil of wire shall be suitably bound and fastened compactly and shall be protected by suitable wrapping.

9.2 Each coil shall be provided with a label fixed firmly on inner part of the coil bearing the following information:

a) Manufacturer's name or trade mark
b) Lot number and coil number
c) Size
d) Grade
e) Mass
f) Length
g) ISI Certification mark, if any.

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TECHNICAL SPECIFICATION FOR SPIRAL EARTH ELECTRODE

1.0 This specification is for Spiral/ Coil earthing for non current carrying parts of DP structures in a distribution system.

2.0 Design & Construction

2.1 The material used shall be No.8 SWG GI Wire or higher size closely wound 115 turns as per drawing BESCOM/GM/QS&S/19/24.11.2018.

Technical Specification for L.T. PVC Insulated Single Core Aluminium Lead Wire (Multi Strand).

1. The PVC Aluminium lead wire (multi strand) shall be of 1,100 volts grade and shall be single core. The cable shall be supplied in coils of 100 Mtrs. Length.

2. The lead wire (multi strand) shall be manufactured, tested and supplied as per IS-694 of 1990 with latest amendments if any.

3. The conductors shall be composed of Aluminium wires complying with IS-8130 of 1984 with latest amendments, if any. The conductor particulars shall be as noted below.

Note: The conductor shall satisfy the requirement of resistance as per IS-8130 and also the nominal cross section specified below:

Sl. no	Cable	Conductor	Weight of Aluminium in kgs/100m	Remarks
1.	50Sq. mm	19/1.83mm	14.40	Un Sheathed
2	70 Sq.mm	19/2.17mm	20.17	Un Sheathed
3	95 Sq mm	19/2.52mm	27.40	Un Sheathed
4	120 Sq mm	37/2.03mm	34.58	Un Sheathed
5	150 Sq mm	37/2.27mm	43.22	Un Sheathed
6	185.0 Sq .mm	37/2.52 mm	53.30	Un Sheathed
7	240.0 Sq .mm	37/2.85 mm	70.30	Un Sheathed

(The weights of Aluminium conductor given above are as per IEEMA circular)

4. The conductor shall be provided with PVC insulation applied by extrusion and the PVC compound shall be type 'A' of IS5831 of 1984 with latest amendments, if any.

5. The colour of the cable and sheath shall be Black.

6. **Packing & Marking**:

6.1 The Marking shall be as per IS: 694 OF 1990 with the following details;

A **On the Lead Wire:**

i) Reference of Indian Standard IS 694;

ii) Manufacturer's name, Brand name or Trade-Mark;

iii) The letter **"BESCOM".**

iv) Year of manufacture

v) Type of cable and Voltage Grade;
vi) Nominal cross sectional area of conductor;
vii) Cable code;
viii) Colour of core;
ix) The word 'suitable for outdoor use' ;

The printing, indentation or embossing shall be done on the insulation,. The distance between any two consecutive printings, indentations or embossing shall be not more than 1m.

B **<u>On the Drum/ Reel:</u>**

i) Length of the cable on the reel, drum or coil;
ii) Direction of rotation of drum (by means of arrow);
iii) Approximate Gross Weight in kgs;
iv) Year of manufacture;
v) Purchase Order reference and Date.

6.2 The packing of the cable reel or drum shall also be marked with the standard markings and BESCOM Purchase order reference.

7. Test Certificates:-

a) All the type test certificates stipulated in IS 694 of 1990 with latest Amendments, if any shall be produced for verification and approval.
b) In case of an order, all the acceptance tests stipulated in IS 694 shall be conducted in presence of BESCOM representative.
c) Routine tests shall be conducted and test reports in the form of test certificates signed by a responsible officer of the firm shall be submitted to this office for approval before dispatch of the material.

General Manager Ele,
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